9.—The ecology and distribution of Eucalyptus forrestiana Diels

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Abstract

The distribution of the two subspecies of *Eucalyptus forrestiana* has been determined and the range mapped. Altitude, rainfall and associated soil types are described.

Introduction

Until recently *Eucalyptus forrestiana* Diels had been collected only along the main road from Norseman to Esperance, at the type locality. This was due to the impenetrability of the country on either side which had not then been settled and was covered with dense mallee in which there were few tracks and no roads. The land boom in Western Australian during the decade up to 1970 entailed the penetration of areas of potential farm land by tracks bulldozed for surveyors engaged in soil survey and land assessment, and it was possible to use these for botanical survey also.

Ecology and distribution

In November 1967 and in March and September 1970 the writer visited this area for purposes of vegetation mapping and traversed many of the survey tracks. As *E. forrestiana* is a conspicuous species it was readily possible to define its range. The ecology is slightly different on the east and west sides of the Norseman-Esperance road. On the west, from the sea between Hopetoun and Esperance a coastal plain slopes gently upwards for about 40 km. inland to an altitude of about 200 m., where the country levels off to a flat plain stretching for a further 30-40 km. This plain has a mallee soil with a differentiated profile of sand over clay, which is winter-wet due to the flatness of the country, with considerable areas having a gilgai surface. Such country with its special soil conditions carries a distinctive plant association in which *Eucalyptus eremophila* F. Muell. and *E. forrestiana* are the dominants. The area occupied by this association is therefore the range of *E. forrestiana* which it is possible to map with some exactitude from aerial photography on the accompanying diagram (Fig. 1). The range extends for 110 km. to the west of Truslove, and within the hatched area the species is very abundant. It has not been observed outside the area shown, presumably due to close association with the particular soil type.

On the east side of the Norseman-Esperance road the country is in general similar to that to

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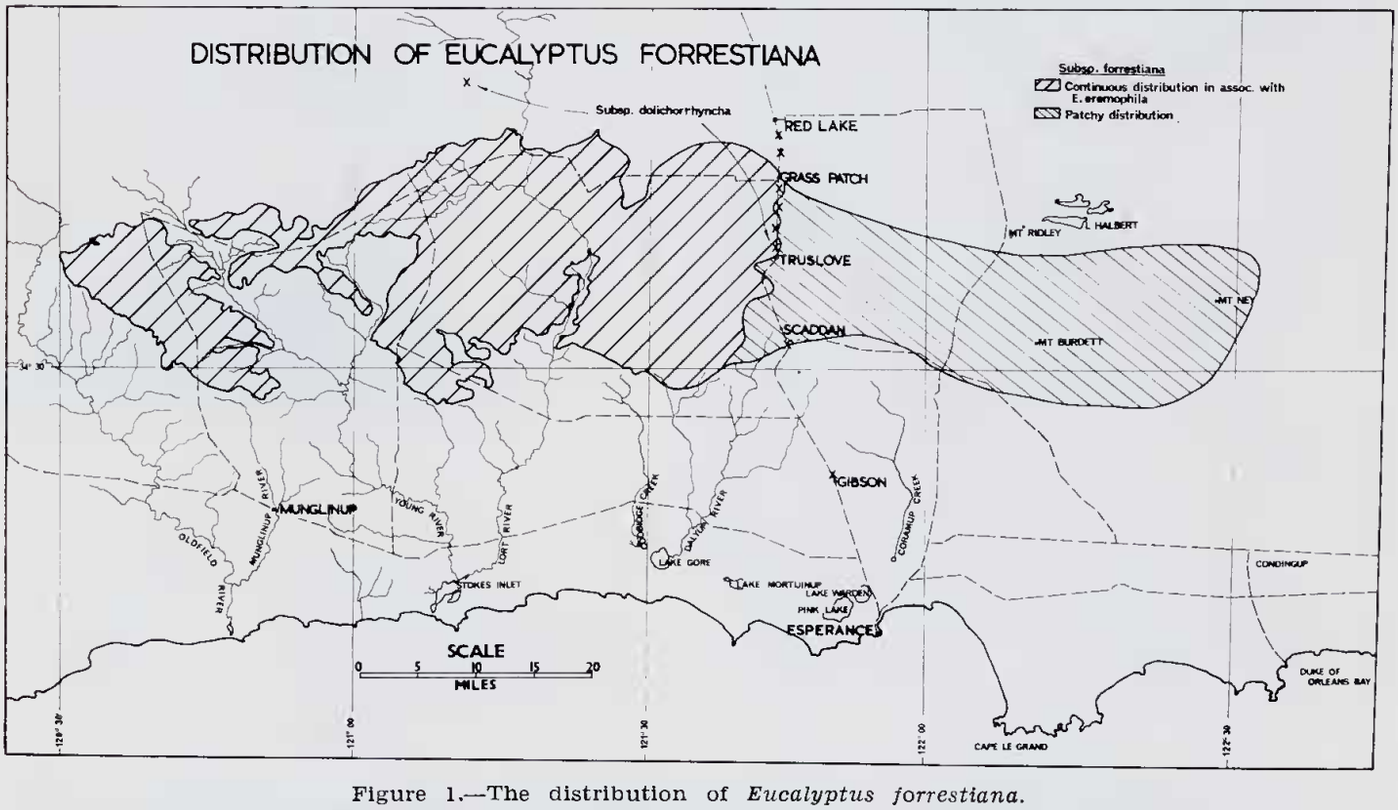

Figure 1.—The distribution of *Eucalyptus forrestiana*.

the west and is likewise covered with dense mallee associations but there are no longer large extensive areas of the soil-type on which *E. forrestiana* occurs. The species appears to be in general less common and to be locally frequent in patches of badly drained or gilgai soil. It was recorded as far east as Mt. Ney (Beard 6388), 65 km. to the east of Truslove, beyond which on equivalent soils it appears to be replaced by *E. dielsii*. In this sector it occupies a belt about the same distance from the coast as its western distribution, indicating some relation to rainfall which averages between 335 and 385 mm. per annum.

The gross distribution mapped is that of *E. forrestiana* subsp. *forrestiana*. Subspecies *dolichorhyncha* M. I. H. Brooker (1973) has been observed only along the Norseman-Esperance main road where it mingles with subsp. *forrestiana*, except for a single instance known; Beard 5867 was collected in a heath association 50 km. west of the main road, on a track 16 km. south of Peak Eleanora. It is possible therefore that subsp. *dolichorhyncha* does extend across the intermediate country between this point and its type locality.

The vegetation of this belt of country is generally described as "mallee" and contains many true mallee species of *Eucalyptus* in which a massive underground rootstock is developed. Following destruction of the top growth by a bush fire the plant sprouts again from the stock with numerous spindly stems. Neither *E. forrestiana* nor *E. eremophila* with which it associates adopts this growth form. Each tree is single-stemmed and originated as a seedling after the last bush fire. These species are killed by fire and do not regenerate by coppice. This behaviour has been described by Beard (1967) in *E. platypus*, which forms "thickets" some 150 km. further west in the Ravensthorpe area where it was noted that *E. annulata* and *E. spathulata* also share this habit. Such small trees, reaching heights of 5 to 10 m. are strictly-speaking not mallees and are known in Western Australia as "marlocks". Technically the formation should be known as low forest.

Reference

Beard, J. S. (1967).—A study of patterns in some West Australian heath and mallee communities. *Aust. J. Bot.* **15**: 131-9.

Brooker, M. I. H. (1973.—*Eucalyptus forrestiana* subsp. *dolichorhyncha*, a new taxon from Western Australia. *J. Roy. Soc. W. Aust.* **56**: 10-11.